Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Request of PTC-220, LLC for Waivers of Certain 220 MHz Rules	)	**WT Docket No. 08-256**
	)	
	)	
Construction Progress Report	)	

To: Chief, Wireless Telecommunications Bureau

PTC-220, LLC
CONSTRUCTION PROGRESS REPORT

I. INTRODUCTION

PTC-220, LLC ("PTC-220") submits this Construction Progress Report to satisfy the requirements of paragraph 16 of the Memorandum Opinion and Order ("*Waiver Order*") adopted by the FCC on June 25, 2009.[1] This Report details the progress made during the past six months in implementing the Systemwide Build-out Plan (the "Build-out Plan") submitted by PTC-220 on November 1, 2010, in the above-referenced docket. The Build-out Plan explained how PTC-220's 220 MHz licenses ("Licenses") would be used in deploying a nationwide positive train control ("PTC") system, as required by Federal statute. The construction of the Licenses will be undertaken in large part by each of PTC-220's member railroads, although PTC-220 will also coordinate construction activities by non-member railroads.

[1] *Request of PTC-220, LLC for Waivers of Certain 220 MHz Rules*, Memorandum Opinion and Order, 24 FCC Rcd 8537 (2009).

II. SITE BUILD-OUT ACTIVITY

As reported in Section II.B of the Build-out Plan, the actual installation of fixed PTC radios (base and wayside stations) will not begin in earnest until production quantities are available some time later in 2012. In the meantime, PTC-220's member railroads have been engaged in preparing the sites for the installation of radio equipment. This preparatory work has included: coverage predictions, site selection, installation of antenna systems, upgrade of site power supplies, site pre-wiring, and clearing rack space for the PTC radios. The table set forth below reflects, by state and member railroad, the number of base station sites where this preparatory work is complete or substantially complete.

State	BNSF	CN	CP	CSX	KCS	NS	UP
AL				17		12	
AR	4				8		1
AZ							2
CA	41						21*
CO							4
FL				21			
GA				11		31	
IA	26		16				3
ID	8						2
IL	13		4	6		4	10
IN				37		9	
KS	10				3		1
KY				28		8	
LA	6	8			22	2	8
MA				8			
MD				2		2	
MI				7			
MN	30						
MO	22				8		
MS		4			13	10	
MT	50						
NC				17		15	
ND	19						
NE	17						9
NJ				2			
NM							

NY			13	26			
OH				34		6	
OK					6		
OR							
PA			8	13		7	
SC				3		15	
SD	2						
TN	2			22		25	
TX	13				12		3
WA	46			36			1
WY							6
VA				30		19	
Total	309	12	41	320	72	165	71

* PTC-220's prior Construction Progress Report, filed on November 1, 2011, identified 63 sites for Union Pacific in the State of California, which was an error because it included some wayside sites instead of just base station sites. PTC-220 discovered this during the course of preparing this Construction Progress Report, and the correct figure is now reflected in the table above.

In addition to base stations, fixed wayside stations, as described in Section II.C of the Build-out Plan, will be deployed along PTC rights-of-way. Preparatory work similar to that which has been performed for the base stations is proceeding for these wayside sites. Likewise, preparation and development of the PTC mobile radios that will be used onboard the locomotives is proceeding in due course.

III. TTCI ACTIVITIES

As PTC-220 described in its prior reports to the Commission, Transportation Technology Center, Inc. ("TTCI") is PTC-220's contractor for technical support services related to PTC. These services include RF network design as well as management and coordination of PTC-220's spectrum holdings.

One of TTCI's first assignments was to assess the PTC spectrum needs in two key areas: Chicago and the Los Angeles Basin. These tasks were finished in early December 2011. Subsequently, TTCI has been tasked with developing spectrum needs assessments for three more areas: Kansas City (KS and MO); St. Louis, MO; and Philadelphia PA. These cities represent

the next tier of rail complexity and congestion, after Chicago. Relying on the expertise and processes it developed in connection with assessing the spectrum needs in L.A. and Chicago, TTCI is currently engaged in the arduous task of gathering data for the new subject areas.

TTCI is also actively working on extensions to its Frequency Application Management System ("FAMS"). FAMS will be the system used to hold and manage information about PTC networks, including frequency and slot assignments. In addition, FAMS will interface directly with the new tools that are being developed to aid in network design.[2]

IV. EQUIPMENT DEVELOPMENT

Since PTC-220's last Construction Progress Report (filed on November 1, 2011), Meteorcomm LLC ("Meteorcomm")[3] has secured Part 90 Equipment Certifications for all four radio models—wayside, locomotive, and two base models with different power supply voltages.[4] Meteorcomm is also investigating the need for Part 80 certifications as a result of inquiries from entities considering the use of AMTS spectrum for their PTC systems. Additionally, equipment certifications from Industry Canada are in progress.

There are currently two manufacturers set up for production of the PTC radios. Limited quantities of pre-production radios began shipping in April, and deliveries of production quantity radios are slated for the third quarter of 2012.

Although Meteorcomm believes that the radio hardware designs are essentially final, software and firmware continue to be developed. Core PTC functionality is now available and

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[2] *See infra* Section VII.

[3] Meteorcomm is PTC-220's radio design vendor responsible for developing hardware, firmware, and software for the PTC radios (base, wayside, and locomotive).

[4] The FCC IDs for these radios are BIB63010, BIB63020, BIB63030-24, and BIB63030-48.

undergoing testing, while other necessary functional requirements will be met over a series of scheduled software releases.

V. FIELD TESTING

Mendota, IL. 220 MHz PTC radio qualification testing was conducted in Mendota, IL, from December 1-7, 2011, with Union Pacific ("UP"), Norfolk Southern ("NS"), MeteorComm, CSX Corporation ("CSX"), and BNSF. The primary purpose of such testing was to qualify the hardware design for pre-production radios in a revenue track environment. The testing included base, locomotive and wayside radios. A total of 54 test cases were completed, covering 16 different test scenarios, including bit error rate tests for both stationary and moving locomotives and wayside status beacons.

L.A. Basin. From April 16-20, 2012, interoperability testing was conducted for multiple railroad radio installations with BNSF, UP and Metrolink. These tests included base, wayside and hy-rail vehicles from all participants, and validated and confirmed RF coverage predictions for all base station sites. Additionally, hy-rail vehicle handoff between base stations and waysides was completed at this time, and Bit Error Rate and base station load testing was performed.

VI. SPECTRUM

On December 15, 2011, PTC-220 presented to the Commission the results of the spectrum needs studies for L.A. and Chicago.[5] This presentation demonstrated that, although PTC-220 may hold enough spectrum to support PTC for the near term in L.A., it does not have

[5] *See* Ex Parte Letter from Michele C. Farquhar, Counsel to PTC-220 LLC, Hogan Lovells US LLP, to Marlene H. Dortch, Secretary, Federal Communications Commission, WT Docket Nos. 11-79 and 08-256 (Dec. 16, 2011).

enough spectrum to support PTC operations in Chicago. As part of this presentation, PTC-220 also indicated that it might need to seek waiver requests to improve the efficient use of its spectrum holdings.

On February 3, 2012, PTC-220 made a presentation to the Commission concerning these contemplated waiver requests,[6] noting that it might seek a waiver of the power and antenna height restrictions for frequencies in the "mobile side" (221-222 MHz) of the band,[7] as well as of the power and antenna height restrictions for the base station transmit channels in the "J" Block (Channels 196-200).[8] Although PTC-220, at that time, believed that it was likely to file the waiver requests within 60 days of the February meeting, the actual filing has been delayed due to PTC-220's separate but related effort to resolve problems with the J Block channel. PTC-220 is now working on a possible swap of its J Block channels with another 220 MHz license holder. If this swap is successful, any waiver requests related to the J Block would be unnecessary. PTC-220 still intends to file any needed waiver requests as soon as it knows whether the J Block swap will in fact occur.

Based on the studies conducted to determine the spectrum needs for PTC deployment, PTC-220 launched a survey of potential sources for additional spectrum in the Chicago area, and initial contacts have been made to the licensees of such spectrum. Moreover, now that PTC-220 better understands the requirements for spectrum suitable for PTC, it has determined that certain of its licenses are inappropriate for PTC use. In particular, seven of PTC-220's licenses, acquired as part of a bundle that included nationwide licenses, are for non-contiguous spectrum

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[6] *See* Ex Parte Letter from Michele C. Farquhar, Counsel to PTC-220 LLC, Hogan Lovells US LLP, to Marlene H. Dortch, Secretary, Federal Communications Commission, WT Docket Nos. 11-79 and 08-256 (Feb. 7, 2012).

[7] 47 C.F.R. § 90.729(b).

[8] *Id.* § 90.729(c).

and cannot support PTC. As such, PTC-220 has offered these licenses on the secondary spectrum market through Spectrum Bridge's SpecEx listing service.

PTC-220 is now fielding potential inquiries from commuter railroads that are seeking to lease spectrum for their PTC systems. PTC-220 has entered non-disclosure agreements with a couple commuter railroads and has several others in progress, and it anticipates that it may enter into lease agreements with some of these commuter rail operators in the near future.

VII. NETWORK PLANNING TOOLS

In 2011, the railroad PTC community engaged in an effort to standardize RF coverage and network planning tools. Only with defined standards can disparate projects completed by multiple entities integrate with each other. The result of this work was to name Mentum Planet® as the standard tool for these purposes.

Although Mentum Planet is a comprehensive and capable tool, it does not directly accommodate the unique architecture and protocols of PTC (nor does any other tool on the market). To remedy this, PTC-220 has contracted with Meteorcomm to design a custom extension module for the Mentum Planet product to accurately model the attributes of PTC. TTCI will also contribute to this effort to ensure that FAMS integrates seamlessly with the new module. This module development effort is now underway.

PTC-220 has also contracted with Mentum to provide hosting services for the coverage and network planning tools, which will provide a centralized repository for the tools, databases, and other information related to PTC RF communications projects. Although TTCI will be the primary user of these hosted services for the design of congested areas, individual member railroads will also use them for their PTC projects in less congested areas.

VIII. CONCLUSION

As described above, PTC-220 continues to make substantial and steady progress in executing its Build-out Plan. Although PTC-220 believes that it may need to seek a future waiver from the power and antenna height restrictions applicable to certain of its licenses to optimize the efficiency of its spectrum holdings and facilitate the deployment of PTC, it anticipates no material obstacles to meeting the 2014 deadline to provide substantial service.

Respectfully submitted,

/s/ Michele C. Farquhar

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